MELANOMA OF SKIN

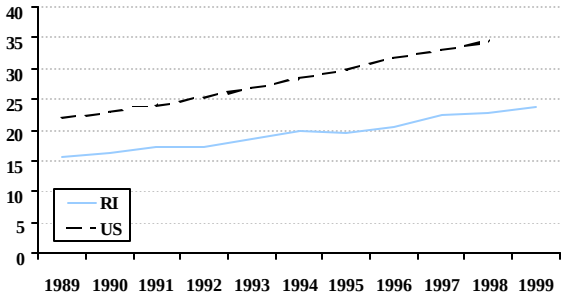
Skin cancer originates in the layers of the skin (epidermis, dermis, and fatty connective tissue). Three types of skin cancer exist: basal cell carcinoma, squamous cell carcinoma, and melanoma. Melanoma develops with the uncontrollable growth of clusters of abnormal melanocytes (skin cells). It is the most harmful type of skin cancer and can spread to nearby tissue if left untreated. Sometimes it can even spread further to other areas of the body. Most moles are normal and not cancerous, however, sometimes the cells of moles become cancerous and form melanoma. (RICAN)

Melanoma of skin is not among the most prevalent cancers in the state (and the nation), but it is significant for cancer control efforts, because of protective behaviors known to reduce the risk of skin cancer. Among Rhode Islanders, melanoma of skin accounted for 3% of all newly diagnosed cancers in 1997-2001, with an annual average of 114 male and 83 female newly diagnosed cases in each of the five years 1997-2001. Melanoma of skin accounted for just over 1% of all cancer deaths in 1996-2000, with an annual average of 15 male and 16 female deaths in each of the five years 1996-2000. In Rhode Island, approximately 2,200 people alive today were diagnosed with melanoma of skin at some point in the past 25 years (1,109 males and 1,123 females in 2000). (RICR)

Cancer Rates

Figure 10-1. Male melanoma of skin incidence by year

Average annual invasive melanoma of skin incidence rates** by year among males, RI and US, 1987-2001***.*



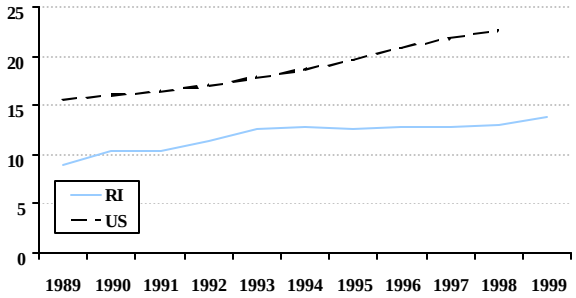
* Invasive includes the following stages of disease at diagnosis: local, regional, distant, and unknown.
** Rates are age-adjusted to the year 2000 US standard population, expressed as cases per 100,000 population.
*** Rates are five-year moving averages.
Source: RICR, HEALTH; SEER Public-Use 1973-2000 Data; calculated with *SEER*Stat*.

The age-adjusted incidence of invasive melanoma of skin among RI males of all races increased from 15.4 cases per 100,000 males in 1989 to 23.8 in 1999 (based on five-year moving averages). Similarly, the age-adjusted incidence of invasive melanoma of skin among US males of all races increased from 21.9 cases per 100,000 males in 1989 to 34.5 in 1998 (based on five-year moving averages). US melanoma of skin incidence rates for males were higher than RI rates throughout the period of observation.

[Note: Separate graphs for males and females may not have the same y-axis scale.]

Figure 10-2. Female melanoma of skin incidence by year

Average annual invasive melanoma of skin incidence rates** by year among females, RI and US, 1987-2001***.*



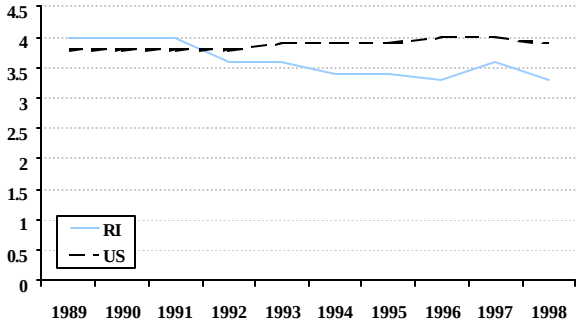
* Invasive includes the following stages of disease at diagnosis: local, regional, distant, and unknown.
** Rates are age-adjusted to the year 2000 US standard population, expressed as cases per 100,000 population.
*** Rates are five-year moving averages.
Source: RICR, HEALTH; SEER Public-Use 1973-2000 Data; calculated with *SEER*Stat*.

The age-adjusted incidence of invasive melanoma of skin among RI females of all races increased from 8.9 cases per 100,000 females in 1989 to 13.8 in 1999 (based on five-year moving averages). Similarly, the age-adjusted incidence of invasive melanoma of skin among US females of all races increased from 15.7 cases per 100,000 females in 1989 to 22.6 in 1998 (based on five-year moving averages). US melanoma of skin incidence rates for females were higher than RI rates throughout the period of observation.

[Note: Separate graphs for males and females may not have the same y-axis scale.]

Figure 10-3. Male melanoma of skin mortality by year

Average annual melanoma of skin mortality rates by year among males, RI and US, 1987-2000**.*



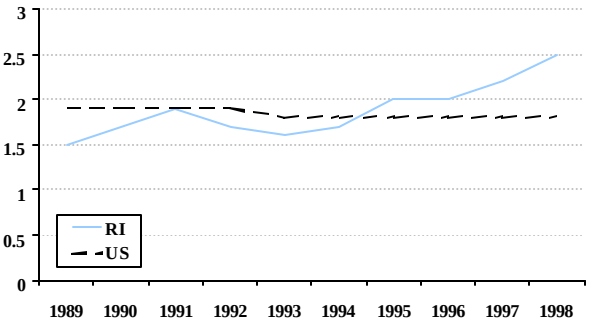
* Rates are age-adjusted to the year 2000 US standard population, expressed as deaths per 100,000 population.
** Rates are five-year moving averages.
Source: Office of Vital Records, HEALTH; SEER US Mortality 1969-2000 Data; calculated with *SEER*Stat*.

From 1989 to 1998, the age-adjusted mortality of invasive melanoma of skin among RI males of all races varied between 3 and 4 deaths per 100,000 males (based on five-year moving averages). The age-adjusted mortality of invasive melanoma of skin among US males of all races hovered around 4 deaths per 100,000 for the entire period of observation (based on five-year moving averages).

[Note: Separate graphs for males and females may not have the same y-axis scale.]

Figure 10-4. Female melanoma of skin mortality by year

Average annual melanoma of skin mortality rates by year among females, RI and US, 1987-2000**.*



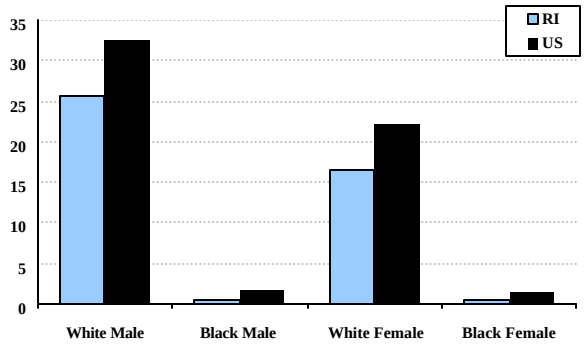
* Rates are age-adjusted to the year 2000 US standard population, expressed as deaths per 100,000 population.
** Rates are five-year moving averages.
Source: Office of Vital Records, HEALTH; SEER US Mortality 1969-2000 Data; calculated with *SEER*Stat*.

The age-adjusted mortality of invasive melanoma of skin among RI females of all races was 1.5 deaths per 100,000 in 1989 and was 2.5 deaths per 100,000 in 1998 (based on five-year moving averages). This may suggest an increase in melanoma of skin among RI females. The age-adjusted mortality of invasive melanoma of skin among US females of all races hovered around 2 deaths per 100,000 for the entire period of observation (based on five-year moving averages).

[Note: Separate graphs for males and females may not have the same y-axis scale.]

Figure 10-5. Melanoma of skin incidence by race and sex

Average annual invasive melanoma of skin incidence rates by race and sex, RI and US, 1987-2000.*



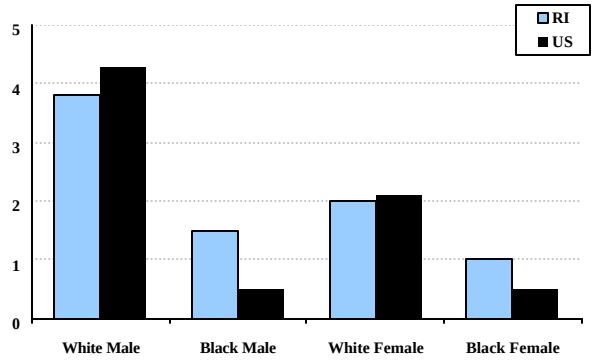
* Rates are age-adjusted to the year 2000 US standard population, expressed as cases per 100,000 population.
Source: RICR, HEALTH; SEER Public-Use 1973-2000 Data; calculated with *SEER*Stat*.

In 1987-2000, melanoma of skin incidence rates in RI were dramatically higher among white males (26 cases per 100,000) than black males (0 cases per 100,000). US male rates were also higher among white males. Female melanoma of skin incidence rates during this period were dramatically higher among white females (17 cases per 100,000) than black females (1 case per 100,000) in RI. This was also true of US females rates.

[Note: RI incidence data for 2001 is currently available. US incidence data is only available through 2000. For comparability, the figure at left contains RI data through 2000.]

Figure 10-6. Melanoma of skin mortality by race and sex

Average annual melanoma of skin mortality rates by race and sex, RI and US, 1987-2000.*



* Rates are age-adjusted to the year 2000 US standard population, expressed as deaths per 100,000 population.
Source: Office of Vital Records, HEALTH; SEER US Mortality 1969-2000 Data; calculated with *SEER*Stat*.

In 1987-2000, melanoma of skin mortality rates in RI were higher among white males (4 deaths per 100,000) than black males (2 deaths per 100,000). US male rates were also higher among white males. Female melanoma of skin mortality rates during this period were higher among white females (2 deaths per 100,000) than black females (1 deaths per 100,000) in R. The same was true for melanoma of skin mortality rates among US females.

***Healthy People 2010* Targets**
Mortality: By 2010, reduce the rate of melanoma cancer deaths to 2.5 deaths per 100,000 population (age-adjusted to the year 2000 standard population of the United States; baseline = 2.8 deaths per 100,000 population in 1998).

Risk Factors

Common risk factors for melanoma of skin include white race, mole characteristics (type and number), family or personal history of skin cancer (particularly melanoma), and immunosuppression. (Clinical) Persons with excessive exposure to sunlight, severe sunburns in childhood, and fair skin may be at increased risk. (Clinical, NIH) An association between melanoma mortality and latitude has also been suggested. (NIH)

Prevention

Exposure to the sun is important for healthy living. However, too much exposure to the sun's ultraviolet rays can cause premature aging, wrinkles, and skin cancer. Factors that influence the intensity of the sun's rays include time of day, season, altitude, global location, and length of time spent in the sun. (Cancercare) Exposure to ultraviolet light also occurs from artificial sources such as tanning booths and sun lamps. Limiting sun exposure and preventing sunburn may help protect against melanoma.

The American Cancer Society recommends (ACS):

- The most important ways to lower your risk of melanoma are to avoid being outdoors in intense sunlight too long and to practice sun safety when you are outdoors even on cloudy or cool days. You can maintain your level of outdoor physical activity and protect your skin at the same time. Practicing sun safety includes:
    - Seeking shade – avoid being outdoors in sunlight too long
    - Protecting your skin with clothing
    - Using sunscreen – SPF of 15 or more
    - Wearing sunglasses – wrap-around sunglasses with 99% to 100% UV absorption
    - Avoiding other sources of UV light – avoid tanning beds and sun lamps
    - Protecting children from the sun
    - Identifying abnormal moles and having them removed
    - Learning more about skin cancer prevention
    - Getting genetic counseling – If several members of one side of your family have had melanoma, if you have had multiple melanomas, or if you have had melanoma at young age or have dysplastic nevi, you may have a gene mutation causing melanoma and should talk to your doctor about genetic counseling.

Clinicians should advise patients to protect their skin from exposure to sunlight. (Clinical)

Healthy People 2010 **Targets**
Prevention: By 2010, increase the proportion of adults aged 18 years and older who follow protective measures (avoid the sun between 10 a.m. and 4 p.m., wear sun-protective clothing when exposed to sunlight, use sunscreen with a sun-protective factor (SPF) of 15 or higher, and avoid artificial sources of ultraviolet light) that may reduce the risk of skin cancer to at least 75% (age-adjusted to the year 2000 standard population of the United States; baseline = 47% of adults aged 18 years and older regularly used one protective measure in 1998).

Screening

Screening for skin cancer involves total-body physical examination of the skin. Systematic use of this process is controversial. The USPSTF concludes, "evidence is insufficient to recommend for or against routine screening for skin cancer using a total-body skin examination." (Clinical) However, other organizations support the practice of regular screening examinations, particularly in persons at high-risk for skin cancer.

The American Cancer Society recommends (ACS):

- A monthly skin self-exam
- That your routine health exam include a skin examination for cancer

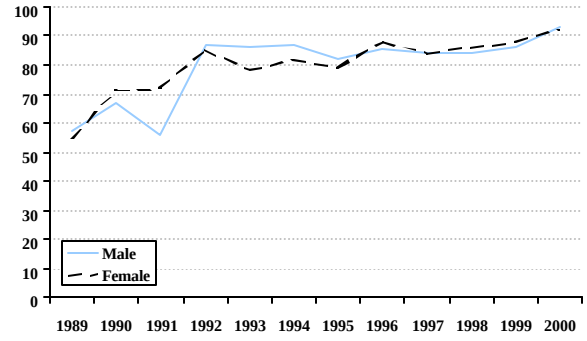
Treatment

Melanomas are almost always removed with surgery. Common surgical treatment options include: simple excision, wide excision (or re-excision), or lymph node dissection. Non-surgical treatment options are not the primary methods for treatment of melanoma, however chemotherapy, radiation therapy, or biological therapy may be used. (RICAN)

The percent of melanoma of skin cases in RI ACOS-approved treatment programs and the percent staged with AJCC staging methodology is detailed below.

Figure 10-7. Melanoma of skin in ACOS programs by year and sex

Percent of melanoma of skin cases that were or are treated in ACOS approved cancer treatment programs by year and sex, RI, 1989-2000.

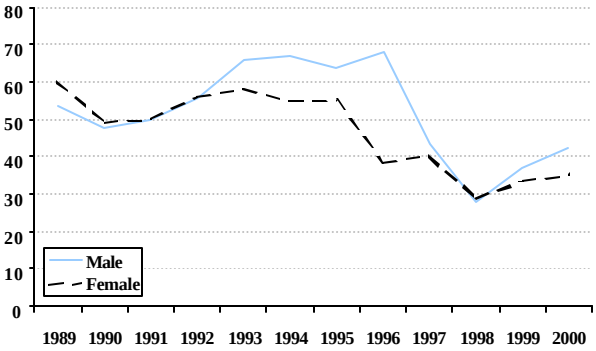


Source: RICR, HEALTH

The percent of melanoma of skin case reports among males from ACOS approved hospital cancer treatment programs in RI averaged 60% in 1989-1991, varied around 85% from 1992 to 1999, and then increased to 93% in 2000. Among females, this proportion increased from 55% in 1989 to 72% in 1991, varied from 78-88% in 1992-1999, and then increased to 92% in 2000.

Figure 10-8. Melanoma of skin with AJCC staging by year and sex

Percent of melanoma of skin cases staged with AJCC staging methodology by year and sex, RI, 1989-2000.



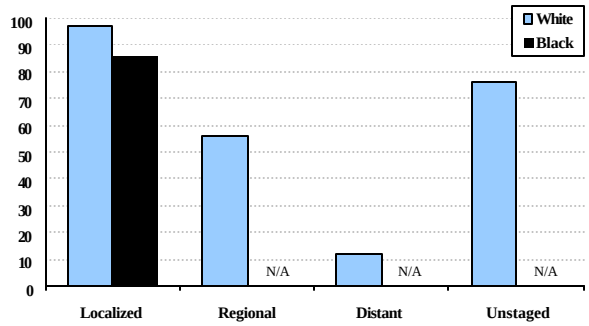
Source: RICR, HEALTH

The proportion of diagnosed melanoma of skin cases staged using the AJCC system among males increased from 48% in 1990 to 68% in 1996, dropped to 28% in 1998 and increased slightly to 42% in 2000. Among females, this proportion increased from 49% in 1990 to 58% in 1993, decreased to 29% in 1998 and increased slightly to 35% in 2000.

Survival

Figure 10-9. Male melanoma of skin survival rates by race and stage

Five year relative invasive melanoma of skin survival rates by race and stage of disease at diagnosis among males, US, 1992-1999.*



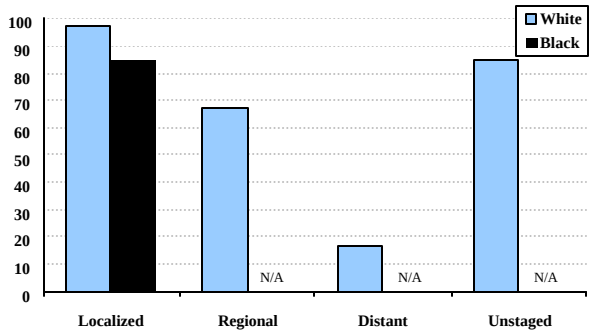
* Survival rates are relative rates expressed as percents.
** The standard error of the survival rate is greater than 10 percentage points.
N/A Statistic could not be calculated.
Source: *SEER Cancer Statistics Review, 1975 -2000.*

Based on US data from 1992-1999, five-year relative survival rates for male melanoma of skin are higher when diagnosed at earlier stages of disease, and for localized cases are higher among white males than black males. Melanomas of skin that are diagnosed while localized have a survival rate of 97% among white males and 86% among black males. Cancers that are not diagnosed until a distant stage have a survival rate of 17% among white males. Data for black male survival rates are not available for regional, distant, and unstaged melanoma of skin cases.

[Note: Separate graphs for males and females may not have the same y-axis scale.]

Figure 10-10. Female melanoma of skin survival rates by race and stage

Five year relative invasive melanoma of skin survival rates by race and stage of disease at diagnosis among females, US, 1992-1999.*



* Survival rates are relative rates expressed as percents.
** The standard error of the survival rate is between 5 and 10 percentage points.
Source: *SEER Cancer Statistics Review, 1975 -2000.*

Based on US data from 1992-1999, five-year relative survival rates for female melanoma of skin are higher when diagnosed at earlier stages of disease, and for localized are higher among white females than black females. Melanomas of skin that are diagnosed while localized have a survival rate of 97% among white females and 85% among black females. Cancers that are not diagnosed until a distant stage have a survival rate of 16% among white females. Data for black female survival rates are not available for regional, distant, and unstaged melanoma of skin cases.

[Note: Separate graphs for males and females may not have the same y-axis scale.]

Discussion

Summary of Burden

Although the annual number of new melanomas diagnosed in Rhode Island is relatively small, their burden is significant because they are preventable, they are increasing, and because melanomas diagnosed at later stages are difficult to control.

The incidence of melanoma of skin increased approximately 50% over the period 1987-2001. The annual averages of 197 newly diagnosed melanoma of skin cases and 31 deaths are theoretically preventable by limiting sun exposure, by wearing protective clothing and using sunscreen, and by performing regular skin exams (fair-skinned adults should get regular skin examinations from a dermatologist).

Relative Burden

In the 1990's, incidence of melanoma of skin was lower in Rhode Island than in the nation as a whole, despite upward trends in both areas.

However, mortality rates were similar.

Disparities

The burden of melanoma of skin was greater among men than women in the 1990's.

Melanoma incidence and mortality are higher among males than females.

White persons are more likely to be diagnosed with melanoma of skin than black persons, largely because those with fair skin are at a higher risk than those with dark skin.

Incidence of melanoma of skin is substantially higher among whites than blacks, largely because fair-skinned persons are at a significantly greater risk of developing melanoma of skin than dark-skinned persons. However, mortality from melanoma of skin is only slightly higher among whites than blacks, a differential worthy of further investigation.

Status of Control Strategies

The burden of melanoma of skin may be reduced by increasing the proportion of people who practice sun safety behaviors, and by assuring state-of-the-art treatment for all skin cancer patients. Melanoma of skin may be prevented by limiting sun exposure, by preventing sunburn, and among persons at high risk (persons with fair skin, significant history of excessive sun exposure, or family history of melanoma), by visiting annually with a dermatologist. Another important control strategy is to assure state-of-the-art treatment for all cancer patients through improvement of basic treatment infrastructure.

By the year 2000, 9 out of 10 melanoma of skin case reports in Rhode Island were from American College of Surgeons (ACOS) approved hospitals.

In the 1990's, the proportion of melanoma of skin tumors staged with American Joint Committee on Cancer (AJCC) methodology decreased, a cause for concern.

Cancer Control Priorities for 2004

Reduce the burden of melanoma of skin by increasing the proportion of persons who practice sun safety behaviors and who follow recommended guidelines.

Increase the proportion of Rhode Islanders who practice sun safety behaviors and follow recommended guidelines by (a) promoting limited sun exposure and use of sunscreen, (b) promoting awareness of major risk factors, and (c) among high risk populations, promoting regular visits with a dermatologist.

Reduce the burden of melanoma of skin by increasing the proportion of skin cancer patients who receive state-of-the-art treatment.

Increase surveillance of sun safety behaviors.

Increase surveillance of sun safety behaviors, such as limiting sun exposure and using sunscreen. Conduct a careful analysis of risk behaviors in Rhode Island.

Begin to eliminate disparities by identifying reasons for disparities in relative mortality.

Identify reasons for racial disparities in relative mortality, using data from the Rhode Island Cancer Registry, the Behavioral Risk Factor Surveillance System, the Rhode Island Health Interview Survey, and death certificate data.